MEDICAL PROCEEDINGS

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SEISOENSGROETE

Ons will al ons kollegas 'n baie geseënde Kersfees en 'n gelukkige Nuwejaar toewens.

SEASONAL GREETINGS

We take this opportunity of wishing all our colleagues a very merry Christmas and a happy New Year.

REDAKSIONEEL · EDITORIAL

HAAI-AANVAL

Die haaistreek aan die Natalse kus strek oor 'n afstand van slegs 70 myl van die Suid-Afrikaanse kuslyn, en tog het dit 'n onbenydenswaardige reputasie verwerf vir sover dit haai-aanvalle betref. Ongeveer die helfte van hierdie aanvalle is noodlottig.

Hierdie tragedieë het die Durbanse Oseanografiese Instituut aangespoor om kragdadige ondersoek in te stel nie alleen na die beskerming van mense teen haai-aanvalle nie, maar ook na die behandeling van die slagoffers. Onder die talle fasette van hierdie werk is daar die kweking en identifikasie van die bakterieë verkry van die tande van lewende haaie —een van die min navorsingsgebiede in hierdie besondere sfeer wat nie retrospektief is nie. Teen die einde van 1959 het werkers van die Instituut dieselfde giftige hemolitiese paracolibasille in die tande van elk van 3 haaie wat in nette digby die Durbanse strand gevang is, ontdek. Soos verwag kan word van 'n soort bakterie wat nog nooit naby 'n hospitaal was nie, was hierdie basille gevoelig vir die meeste van die nuutste antibiotica, maar, snaaks genoeg, het hulle weerstand teen penisillien gebied.[1] Hierdie selfde werkers was in staat om hierdie buitengewone basil weer eens af te sonder uit die wonde van die slagoffer van 'n haai-aanval

1. Campbell, G. D., Davies, D. H. en Drummond, G. A. (1959): 'n Ongepubliseerde werk. *Aangehaal in die* Voorsittersrede vir 1959, Suid-Afrikaanse Vereniging vir Biologiese Mariennavorsing.

SHARK ATTACK

The Natal Coast 'shark zone' extends for only 70 miles, but it has an unenviable record of shark attacks. About half of them have been fatal.

These tragedies have stimulated energetic research at the Durban Oceanographic Institute not only into the protection of humans from shark attack but also the treatment of the victims. The many facets of this work have included the culture and identification of bacteria swabbed from the teeth of living sharks —one of the few lines of research in this field that has not been retrospective. Late in 1959 the Institute workers discovered the same virulently haemolytic paracolon bacillus in the teeth of each of 3 sharks taken from the nets off Durban beach. As might have been expected of a strain of bacteria which had not been near a hospital, it was sensitive to most of the newer antibiotics but, interestingly enough, resistant to penicillin.[1] These same workers were able to isolate this unusual bacillus once again from the wounds of the victim of a shark attack whose case is described in this issue of *Medical Proceedings*.

Co-operation of the Institute workers with the Surgical Staff of the Addington Hospital

1. Campbell, G. D., Davies, D. H. and Drummond, G. A. (1959): Unpublished work. *Quoted in the* President's Address for 1959, South African Association for Marine Biological Research.

wat in hierdie uitgawe van *Mediese Bydraes* beskryf word.

Medewerking met die Chirurgiese Personeel van die Addington-hospitaal het uitgeloop op die beskrywing van wat bes moontlik die eerste aangetekende oorlewing is by 'n pasiënt wat 'n groot buikbesering ten gevolge van 'n haai-aanval opgedoen het. Deur gebruik te maak van 'n interessante reeks nuwe tegnieke het die skrywers tot die gevolgtrekking geraak dat die haai wat vir hierdie aanval verantwoordelik was, inderdaad die toiingtand-haai (*Carcharias taurus* Rafinesque), 'n lui branderhaai met 'n skrikwekkende stel tande, was.

Dit is passend om die mening van dr. V. Coppleson, van Sydney, 'n erkende wêreldgesaghebbende op die gebied van haai-aanvalle, in die herinnering terug te roep, en sy menings te beaam. Dr. Coppleson het naamlik gesê dat ‚die verslag oor hierdie geval tot groot eer van die Chirurgiese Dienste van die Addington-hospitaal strek.'[2]

2. Coppleson, V. M. (1960): Persoonlike mededeling

has led to the description of what may well be the first recorded survival in a patient who had sustained a major abdominal injury from a shark attack. By the use of an interesting series of new techniques the authors claim that the shark responsible for this attack was, in fact, the Ragged-toothed Shark (*Carcharias taurus* Rafinesque), an indolent surf-dweller, with the most fearsome array of teeth.

It is fitting to recall and endorse the sentiments of Dr. V. Coppleson, of Sydney, an acknowledged world authority on shark attack. Dr. Coppleson states that 'the report of this case reflects very great credit on the Surgical Services of the Addington Hospital'.[2]

2. Coppleson, V. M. (1960): Personal communication.

A CASE OF SHARK ATTACK*

WITH SPECIAL REFERENCE TO ATTEMPTS TO IDENTIFY THE CAUSAL SPECIES FROM THE WOUNDS

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Durban

DETAILED DESCRIPTION OF THE ATTACK

At 3.35 p.m. on an overcast day (30 April 1960), M. H., a male aged 16, was swimming in slightly murky water at Inyoni Rocks, near Amanzimtoti on the Natal South Coast, 16 miles south of Durban (Lat. 30°S., Long. 29° 30'E.). The temperature of the water was 70°F. (23°C.) and high water that afternoon was at 6.10 p.m. As spring tide was on 25 April 1960, the state of the tide at the time of the attack was a medium to high incoming tide. The patient was wearing a pair of home-made swimming trunks, the colours of which were yellow and red, and he had a silver ring on his right hand.

While treading water in a channel in the surf about 10 feet deep and 30 feet from the shore, he felt 'something touch' his right leg, and thought that he had brushed against a stick or some other submerged object. Immediately afterwards he felt a 'pressure and a pull on the right arm', and was dragged downwards below the surface of the water. At this moment, he realized that he was being attacked by a shark, and began a violent fight for his life. He recalls a frenzied underwater struggle with his assailant which lasted for a few seconds and be believes that, as he broke surface and began to swim towards the shore, he was bitten on the right side. He thinks that the shark swam next to him during his swim for the shore, but no further attack took place. He reached the shore and staggered out unaided. At no time did he feel any sensation of pain.

He was carried to the Life Saver's Hut, and was seen within 12 minutes by Dr. W. J.

* A shortened version of this paper was presented at the Congress of the South African Association of Surgeons held in Durban in September 1960.

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MacNabb (of Amanzimtoti) who found the patient shocked but less than one might have expected from such serious injuries.[1] Bleeding had virtually ceased at this stage and his blood pressure was recorded at 90/40 mm. Hg. His wounds included bites on the right leg, the right forearm and hand, a finger of the left hand, and there was a very large wound on the right flank with widespread removal of skin and lateral abdominal wall, exposure and perforation of both large and small bowel, exposure of the right kidney and the whole of the iliac crest (most of the right gluteal muscles being removed as well). He was quite conscious on the beach, and Dr. MacNabb gave him Morphine gr. 1/4 intravenously, and he was put into the head-down position, to ensure a good blood supply to the brain.

He responded well to this treatment, and was quiet and rational when he left Amanzimtoti by car for the Addington Hospital in Durban—a journey of 16 miles which took 45 minutes.

CLINICAL FEATURES, TREATMENT AND PROGRESS

Findings on Admission. The patient was admitted to a Surgical Charge of the Addington Hospital at 4.45 p.m., about an hour after having been bitten by the shark. Examination revealed a severely collapsed patient, with injuries to the right flank, the right forearm, the right leg and the left index finger. He was fully conscious on admission and was able to give a clear and concise account of the attack made upon him. In spite of this, his blood pressure was unrecordable, and the pulse rate lay between 140 and 160 per minute, and it was obvious that urgent resuscitation was required. The patient was given 3 pints of plasma and 3 pints of blood, and was taken to the theatre at 8 p.m.

DESCRIPTION OF THE WOUNDS AND PROCEDURE IN REGARD TO EACH

(*a*) *The Abdominal Wound.* The whole of the right lateral abdominal wall had been torn away (Fig. 1) and two-thirds of the small bowel protruded through this rent.

The anterior skin edges of the abdominal wound were irregular and ragged, and showed large serrations along their whole length. In addition, 2 concentric rows of teeth marks were seen, these being still clearly visible on the abdomen 4 months after the attack. The right kidney lay exposed behind and above the coils of the small bowel and the iliac crest and the anterior superior spine lay bared of all muscle attachment.

Towards the posterior part of the iliac crest, 2 distinct and deep grooves were visible, where the teeth had channeled V-shaped cuts through the bone (Figs. 7 and 9).

The extent of the wound:

Posteriorly, it extended to the lateral border of the erector spinae, extending distally to the level of the natal cleft and proximally reaching the tenth rib. The proximal part of the wound then followed the line of the 10th rib, of which the costal cartilage had been severed, up to the lateral border of the rectus sheath, and then down along this line to just above the level of the anterior superior iliac spine, the wound passing laterally and posteriorly over the anterior iliac spine and well below the iliac crest into the gluteal fold, and back and up to the erector spinae. The caecum had been torn at its ileal junction. Gross soiling of the peritoneal cavity had taken place with both faecal matter and beach sand.

By mobilization of the posterior peritoneal layer, closure of the peritoneal cavity was made possible—no other layers being available for closure.

A relief incision (Fig. 1) was made in the skin below the iliac crest in an attempt to cover this bone. An ileocolostomy was performed, and exteriorized.

(*b*) *The Right Forearm.* The wound extended from below the wrist joint in the palm to half-way up the forearm, the ulnar side alone being involved (Fig. 2). Skin, muscles and tendons had been ripped apart, leaving large skin flaps both on the flexor and extensor sides. The ulnar bone had been grooved in its mid-point, but not fractured. It was easily seen that the ulnar nerve and artery and the median nerve had been severed. Muscle bellies of the flexor and extensor group were so completely disrupted and entangled, that at that stage any attempt to repair would have served no useful purpose. The skin wounds adjoining showed irregular jagged tears and on the flexor surface the 2 rows of teeth marks were quite apparent. After debridement the skin was sutured.

(*c*) *The Right Leg.* Here even more so than in the other areas the marks made by the distinct double rows of teeth were evident (Fig. 3). The elliptical wound, similar in outline to the other two, started from near the knee on its lateral side and extended half-way down the leg. The knee joint was penetrated on its lateral side and the muscles had been ripped apart to produce two distinct flaps, one

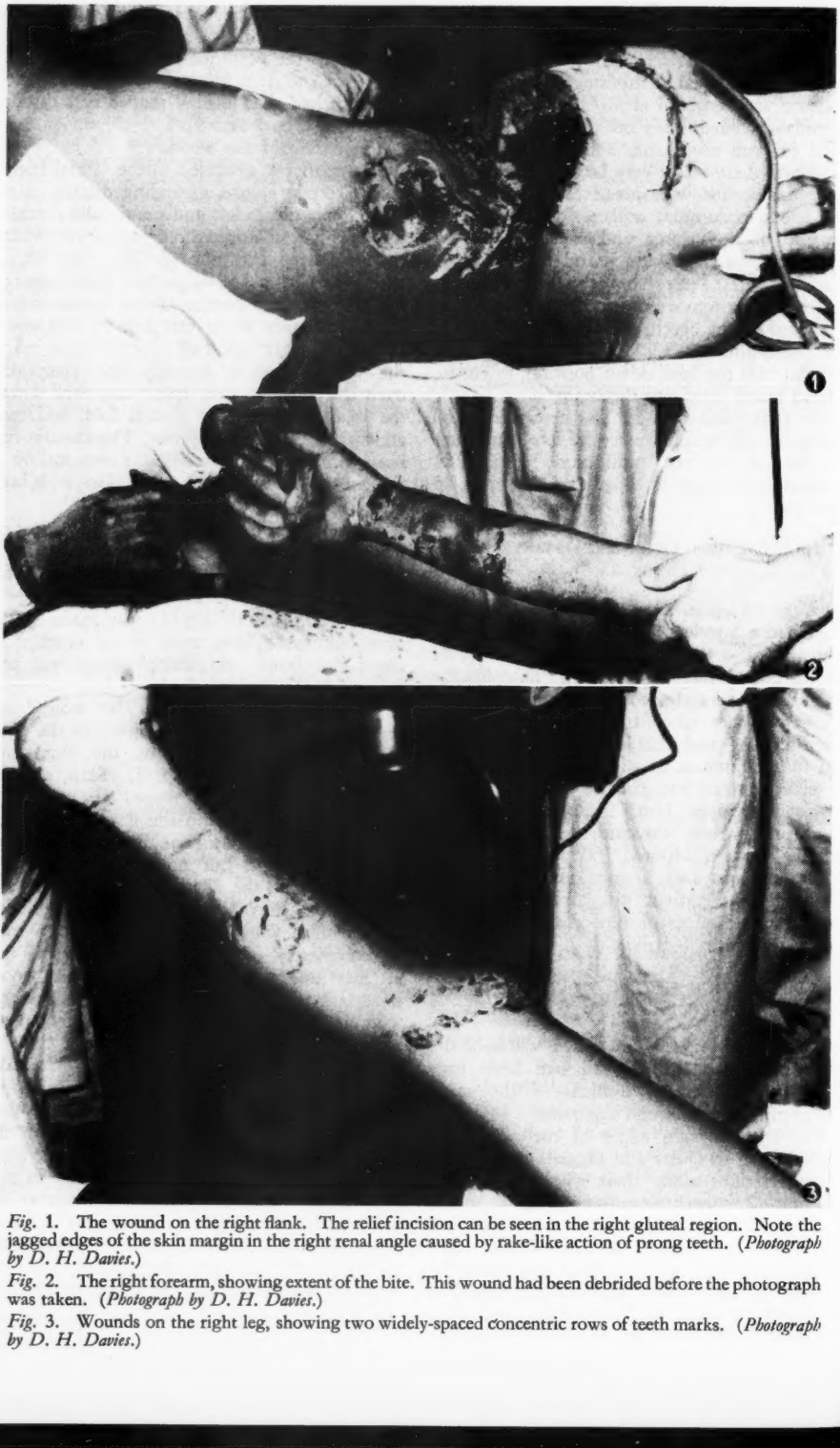

Fig. 1. The wound on the right flank. The relief incision can be seen in the right gluteal region. Note the jagged edges of the skin margin in the right renal angle caused by rake-like action of prong teeth. (*Photograph by D. H. Davies.*)

Fig. 2. The right forearm, showing extent of the bite. This wound had been debrided before the photograph was taken. (*Photograph by D. H. Davies.*)

Fig. 3. Wounds on the right leg, showing two widely-spaced concentric rows of teeth marks. (*Photograph by D. H. Davies.*)

on the posterior and one on the anterior surface. It appeared that the lateral popliteal nerve had been severed. No effort was made to repair this and after routine debridement the skin flaps were sutured back into position.

(*d*) *The Left Index Finger.* This finger had been completely degloved from the proximal interphalangeal joint downwards, the distal interphalangeal joint was dislocated and the extensor tendon at this level was torn off its attachment.

No definitive operation was done on the left index finger, pending assessment of return of function to the right hand. This finger was subsequently amputated.

The whole operation took 4 hours and, in all, the patient received a total of 8 pints of blood and 4 pints of plasma. He left the operating table in a very satisfactory condition. For the next 8 days, parenteral therapy with fluids and vitamins was necessary; in view of sensitivity studies of bacteria from shark's teeth carried out by the Durban Oceanographic Research Institute in 1959[2] (see also below), Terramycin was exhibited. This antibiotic was remarkably effective and his temperature remained in the normal range in spite of complication of his progress by a pelvic abscess, drainage of which resulted in the appearance (not unexpectedly) of sea sand together with a few small pieces of sea shell. A careful check was kept on the serum eloctrolytes and these remained normal. For the first 3 days there was a reduced urinary output but studies of urinary constituents and of the blood urea showed no evidence of renal failure.

Progress. Four months after the attack, all wounds had healed extremely well and it is remarkable that skin grafting was not necessary in the case of the extensive abdominal wound. Following resection of the whole caecum and ileocaecal area and 12 cm. of the ileum, bowel continuity has been restored. An ulnar-median transplant was performed on the right forearm and the right popliteal nerve was reconstituted.

It is most interesting to note that Drummond[10] has been able to isolate from the wounds of the arm and the leg the same virulently haemolytic organism as was isolated from the teeth of a Ragged-toothed Shark by the Oceanographic Research Institute workers in 1959.[2] This is a non-motile beta-haemolytic paracolon bacillus. (Fermentation features: Indole positive; acid only in glucose, mannitol and sucrose; negative in lactose, dulcite and urea).

The organism isolated in 1959 by the Institute workers was resistant to penicillin, Kantrex and Dosulphin. The organism from the present wounds was resistant to penicillin, mycifradin and tertracycline. Amongst antibiotics to which both organisms were sensitive were Terramycin, Mysteclin V, Chloromycetin and Erythromycin.

POSSIBLE CAUSAL SPECIES OF SHARK INVOLVED IN ATTACKS OFF THE NATAL COAST

There has been a good deal of difference of opinion between both fishermen and informed workers about the species of shark that might be responsible for attacks on humans off the Natal Coast. Though there have not been nearly as many attacks here as have been recorded in Australia, their frequency, as compared with the Australian attacks, has been stressed by Coppleson.[3] For full details of the aetiology of shark attacks the world over, there is no better source than Coppleson's book in which, incidentally, full records of Natal attacks up to April 1958 are set out in detail.[3]

Because of its sluggish habits and the fact that it is often seen in very shallow water, many would incriminate the Ragged-toothed Shark (*Carcharias taurus* Rafinesque).[4] This is an ugly, easily recognizable shark with a fearsome array of widely spaced prong-like teeth (Fig. 4). These sharks may actually be seen resting motionless on the sand in shallow water, a habit that differentiates them from most other sharks, which are more inclined to move around at considerable speed. The Ragged-toothed Shark is not as common as the Grey Sharks (*Eulamia spp.*)[5] which are caught more frequently by surf anglers and which possess the 'classical' closely-set, wedge-shaped teeth with serrated edges (Fig. 5). Sharks of this group give a very clean-cut bite, as can be seen from examining wounds inflicted on whale carcases at the Durban slipway. Few would incriminate the Blackfin Shark (*Eulamia limbata* Muller and Henle) (Fig. 6), which is commonly caught in the surf and is chiefly included in the present discussion because of the fact that its dentition lies midway between that of the Grey Sharks and the Ragged-toothed Shark (Fig. 6).

Statements made by eye-witnesses of this attack indicated that the shark responsible was about 7 feet in length. In the same part of the surf, the next day, a shark of the Blackfin type was caught by an angler, which was 7 feet in length, and weighed about 200 lb.[6] Unfortunately, all attempts to obtain this fish or its jaws were unsuccessful.

COMPARISONS BETWEEN SPECIMEN JAWS AND WOUNDS OF THE PRESENT CASE

Specimen preparations for comparison with wounds in the present case included the jaws of 3 different species of shark (Figs. 4–6), taken from the shark jaw collection of the Oceanographic Research Institute in Durban.

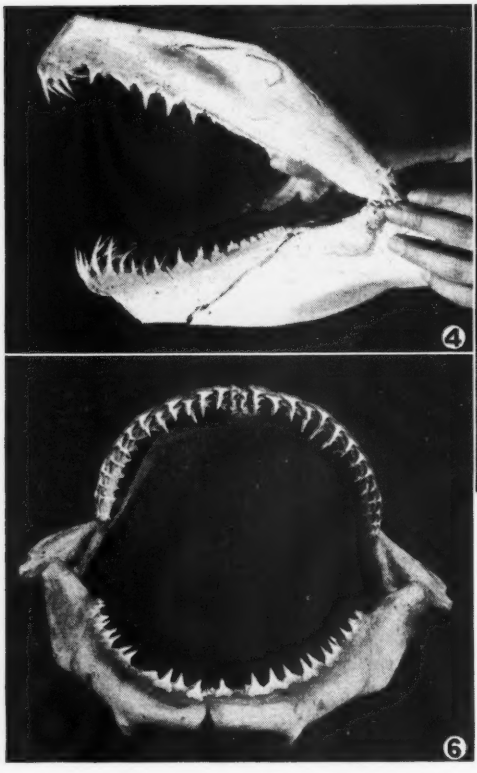

Fig. 4. Lateral view of jaws of the ragged-toothed shark (Carcharias taurus—*Rafinesque*) —Slender, prong-like teeth. (*Photograph by D. H. Davies.*)

Fig. 5. Antero-posterior views of jaws of the grey shark (Eulamia lamia—*Blainville*). Wedge-shaped dentition. (*Photograph by D. H. Davies.*)

Fig. 6. Antero-posterior views of the jaws of the blackfin shark (Eulamia limbata—*Muller and Henle*). Intermediate dentition. (*Photograph by D. H. Davies.*)

Each specimen came from sharks about 7 feet long. These species were selected with a view to providing the greatest range in the type of dentition shown by possible man-eating types in Natal waters. The teeth varied at one extreme from the slender prong-like elongated teeth of the Ragged-toothed Shark (Fig. 4) to the other extreme of the short serrated-edged, wedge-shaped teeth of the Grey Sharks—the specimen of the Grey Shark type actually being *Eulamia lamia* (Blainville) (Fig. 5). The teeth of the Blackfin are intermediate between these 2 species (Fig. 6).

'Bite patterns' of the various types of teeth were obtained by pressing the specimen jaws and teeth forcibly into simulated limbs covered with paper. These impressions have been recorded diagrammatically in Fig. 8. This method is open to error (especially in regard to distance 'Y'—*see below*) in that it does not take into account the outward flaring of the teeth that accompanies the attack and which is not obtained with the rigid, prepared specimen. Apart from this feature, however, reasonably accurate impressions of bite patterns were obtained, especially in regard to distance 'X'—between the tips of the teeth in the front row in each species. These were particularly useful in comparison with patterns made on the right leg and the right lumbar region by the shark.

In comparing the specimen jaws with wounds in the present case, 6 features were found to be of importance:

(*a*) The size of the sweep of the jaws.
(*b*) Evidence obtained from lesions in the bone.
(*c*) Characteristics of skin punctures in the relatively mild bites.
(*d*) The patterns of cut skin edges.

(*e*) The lateral distance between the tips of the teeth in the front row—'distance X'.

(*f*) The distance between the tips of the teeth in the front row, and the tips of the teeth in the second row—'distance Y'.

Each of these is discussed in turn and its relationship with wounds summarized.

i SIZE OF THE JAW IN RELATION TO THE SIZE OF THE SHARK

Assessment of the sweep of the jaws of the attacking shark from wounds caused by the anterior row of teeth was relatively simple. The sweep of skin punctures on the right leg especially (Fig. 3), where there was a 'tentative' bite, lay between those of two specimens of Ragged-toothed Sharks of 7 feet 4 in. (325 lb.) and 7 feet 0 in. (204 lb.), and it is highly probable that the length of the shark was about 7 feet, which is in accordance with the opinions of the eye-witnesses. In the case of the Ragged-toothed Shark this denotes a fish about 250 lb. in weight.

ii. EVIDENCE OBTAINED FROM THE BONY LESIONS OF THE RIGHT ILIAC CREST

The wound on the right flank was evidently inflicted just as the patient started to swim towards the shore. The shark came at him from the right side and inflicted the wound described above and shown in Figs. 1 and 7. During the course of the bite (which was a determined attack as compared with the wounds on the right leg), nearly all the gluteal muscles were removed and 2 deep, widely-spaced, clean-cut defects were made in the crest of the ilium by the shark's left upper antero-lateral teeth. Unfortunately, these were not easily demonstrable by photography (Fig. 7), and only with difficulty by X-rays. Consequently we have depicted them diagrammatically in Fig. 9, which indicates lesions as much as 3 cm. deep. This diagram is based on measurements actually made at the operation from the part of the iliac crest denuded of muscles and they were completed by careful examination of postero-anterior and tomographic X-rays of the iliac crest by Dr. Nathan Sacks. These bony defects accentuate the inordinate length of the teeth and their width at their bases (compare with 3-B in Fig. 1), which shows the characteristics of lower row teeth of the Ragged-toothed Shark. From this observation distance 'X' (*see below*: The distance between the tips of the teeth in the front row), was 2.0 cm., an 'X' which is well within the range of that of the Ragged-toothed Shark (Table 1). These lesions alone are enough to rule out any shark with dentition of the Grey Shark type (Fig. 5) as, in the same circumstances, these teeth would have shorn off the whole of the iliac crest.

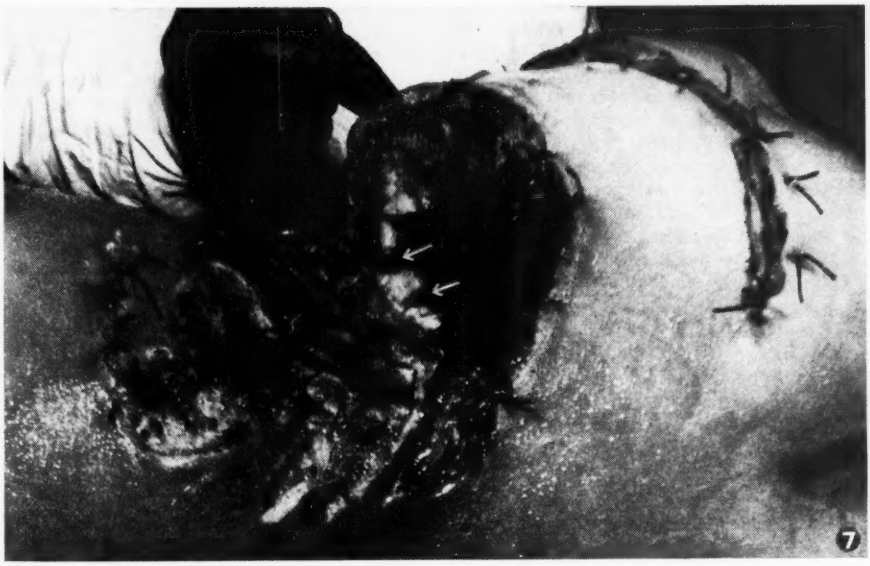

Fig. 7. Close-up of the flank wound, showing bony defects (arrowed) on the iliac crest. (*Photograph: Natal Provincial Administration.*)

iii. CHARACTERISTICS OF THE SKIN PUNCTURES

Examination of the bite patterns (Fig. 1), and of the plates of the 3 types of dentition (Figs. 4–6) indicate that in a 'tentative' bite, such as that on the right leg, very characteristic skin patterns would be expected. The Grey Sharks, with closely-spaced almost contiguous broad wedge-shaped teeth with large cutting edges, would be expected to give continuous, slit-like punctures and, in the case of the upper jaw (with a distance 'Y'—*see below*, of 0–0.1 cm.), a clean semicircular cut. The widely-spaced prong teeth of the Ragged-toothed Shark would give a pattern of oval or round stiletto punctures. Not only would these be widely spaced laterally (that is, a large distance 'X'), but one would expect to find that there would be wide spacing between 2 discrete con-

Fig. 8. Diagrammatic representation of 'Bite Patterns' (Series A) and Individual Teeth (Series B) of:
Grey Shark (Eulamia lamia—*Blainville*): A1 and B1—both upper jaw.
Blackfin Shark (E. limbata—*Muller and Henle*): A2 (upper jaw); B2a upper, and B2b lower jaw.
Ragged-toothed Shark (Carcharias taurus—*Rafinesque*): A3 lower and A4 upper jaw; B3 lower jaw.

(*Drawings by J. d'Aubrey.*)

centric rows of teeth—that is to say, a large distance 'Y' (*see below*). These features are seen in Fig. 3, showing the injuries on the right leg, where the shark evidently made only a tentative bite.

iv. THE PATTERN OF CUT SKIN EDGES

It can be seen in (Fig. 8: A3) that if one were to join with lines the tips of the teeth from medial to lateral in both rows of teeth, that very discrete patterns will result. The Grey Sharks will give a very even curve without ragged edges, making a relatively clean cut. At the other extreme, the Ragged-toothed Shark would give ugly large jagged serrations (Fig. 8: A3). The Blackfin would be intermediate between these types. In this respect it is interesting to note the remarks of the surgeon in describing the jagged skin edges of the abdominal wound on the patient's admission (p. 613). This feature was accentuated in the lumbar skin wound, which shows rake-like lesions (Fig. 1).

v. THE DISTANCE BETWEEN THE TIPS OF THE TEETH IN THE FRONT ROW (DISTANCE 'X')

As was noted above, there is a good deal of outward flaring of teeth at the moment of the bite. This movement makes little difference, however, to the distance between the tips of the teeth in the front row. This measurement (distance 'X') was easily obtained from the lesions on the right leg, the lumbar region and from the bony defects in the right iliac crest. In the specimen jaws, the distance 'X' in the Grey, the Blackfin and the Ragged-toothed Shark were 1.2–1.4 cm., 1.1–1.6 cm. and 2.3–2.7 cm. respectively. (It should be added that the distance 'X' in the antero-medial teeth of the Ragged-toothed Shark is 1.6 cm. only, and the distance quoted above is in respect of the antero-lateral teeth). From measurements of the skin lesions on the right leg and lumbar region, distance 'X' in the attacking shark lay between 1.9 and 2.5 cm., strongly favouring the Ragged-toothed Shark.

vi. THE DISTANCE BETWEEN THE TWO OUTER ROWS OF TEETH (DISTANCE 'Y')

This distance was easily estimated from the lesions on the right leg, where concentric rows of skin punctures were seen, where the shark had made a 'tentative' bite (Fig. 3). Because of the flaring mentioned above, it is not possible to regard distance 'Y' as being as reliable as distance 'X', as outward flaring would tend to give a disproportionately large distance 'Y'. This is particularly so in the case of the Ragged-toothed Shark. Anyone who has seen a recently-caught specimen will testify to this,

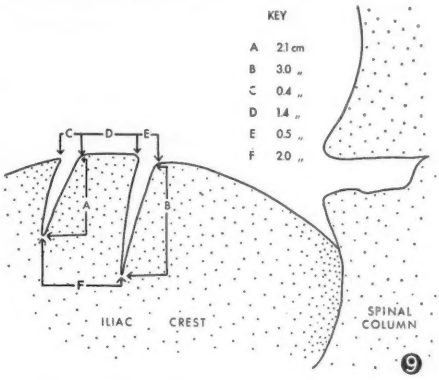

Fig. 9. Diagrammatic representation of bony defects in the right iliac crest. *Based on Tomograms.* (Measurements in centimetres.)

(*Diagram by J. d'Aubrey.*)

as when the shark bares its teeth in the death throes, the teeth in both jaws are flared out almost horizontally, and present a most hideous aspect. We have, however, paid attention to distance 'Y', because were it to be found that this distance in the wounds was excessively large, it would very much favour the Ragged-toothed Shark as, with the relatively shorter teeth of the Blackfin and the Grey, a large distance 'Y' would be unlikely, and in the case of the Grey Shark wellnigh impossible. In the case of the Grey Shark, this distance 'Y' in the upper jaw was 0.0–0.1 cm., and in the lower jaw, 1.1 cm. In the case of the Blackfin, 'Y' was similar in both jaws, being 0.8 cm. in the medial teeth, and 1.1 cm. in the antero-lateral teeth. In the case of the Ragged-tooth, 'Y' was 2.2 cm. in the lower jaws (Fig. 4), and 1.6 cm. in the upper jaw. In the wounds on the right leg, 'Y' varied from 2.5–2.8 cm. in the antero-lateral teeth to 1.5 cm. in the case of the medial teeth. This 'Y' is very large, and would very much favour the Ragged-toothed Shark.

CONCLUSION

The findings in a retrospective study of the type described in this paper are always open to question and it cannot be stated with complete certainty which species of shark was

responsible for this attack. However, on the basis of the circumstances of the attack and on the basis of evidence obtained from the wounds and particularly the bony injuries, we would go so far as to say that it is very likely indeed that the Ragged-toothed Shark (*Carcharias taurus* Rafinesque) can be incriminated, as this is the only truly prong-toothed shark in the Natal surf. Unfortunately, the only way of obtaining confirmatory evidence, would be for the attacking shark to be caught by an angler soon after, and in the vicinity of the attack. Coppleson has recorded this in Australia.[7] A shark of an unknown species was caught the day after this attack at the same place but the findings from an autopsy[8] revealed no fragments of human tissue or bathing suit. Strangely enough, the shark is a slow digester and there is always the possibility of finding undigested human tissue in the stomach for some time after the attack (The 'Shark Arm Case'[9]). If further attacks do occur, we would ask that the doctors handling the cases might record their findings after the system set out in Table 1, so that information may be pooled with a view to trying to establish more fully the exact identity of the sharks responsible for attacks on the Natal Coast. In particular, if there are any bony lesions, it is suggested that they be smeared with sterile BIPP (bismuth, iodoform and paraffin paste) so that they can be delineated more clearly. Unfortunately this was not done in the present case.

TABLE 1: SUMMARY OF COMPARISONS OF SPECIMEN JAWS AND WOUND FEATURES

	Triangular Serrated-edged Teeth	*Intermediate Dentition*	*Widely-spaced Prong-like Teeth*	*Wound Features in the Present Case*
	Grey Shark (Eulamia lamia —Blainville)	*Blackfin Shark (Eulamia limbata —Muller & Henle)*	*Ragged-tooth Shark (Carcharias taurus —Rafinesque)*	
(a) Size of the sweep of the jaws. Diameter in cm.	23 cm.	19·5 cm.	21·8 cm.	23 cm.
	These specimen jaws were taken from sharks 7 feet long			
(b) Bony defects in the right iliac crest	Would shear cleanly through the bone	Shallow defects not widely spaced	Deep widely-spaced defects	Very deep widely-defects.
	These are the lesions that would be expected			
(c) Characteristics of skin punctures	Closely-spaced slit-like cuts	Stiletto punctures not widely spaced	Widely-spaced stiletto-like punctures	Widely-spaced stiletto-like punctures
(d) Patterns of cut skin edges	Clean-cut almost knife-like	Moderately shallow serrations	Large very jagged serrations	Large very jagged serrations
(e) *Distance 'X'* between the tips of teeth in the front row	*Upper:* 1·2 cm. *Lower:* 1·4 cm.	*Upper:* 1·6 cm. *Lower:* 1·1 cm.	*Upper:* Medial: 1·6 cm Antero-lateral: 2·7 cm. *Lower:* 2·3 cm.	1·9 to 2·5 cm.
(f) *Distance 'Y'* between the 2 front rows of teeth	*Upper:* 0·0—0·1 cm *Lower:* 1·1 cm.	0·8—1·1 cm.	*Upper:* 1·6 cm. *Lower:* 2·2 cm.	2·5—2·8 cm. (Antero-lateral). 1·6 cm. (medial)

The case bears out further that it is probably unwise to wear bright colours in a bathing suit and that bathers should take off all rings or other ornaments that might reflect light.

SUMMARY

The circumstances of a shark attack on a human off the Natal Coast are described and full clinical details given about the injuries and the treatment of the case.

Careful comparisons have been made between soft tissue injuries and bony injuries and specimen jaws of sharks of approximately the same size, representing the 3 main types of shark dentition in Natal waters.

These observations have led us to conclude that a fish possessing widely-spaced and prong-like teeth, viz. the Ragged-toothed Shark (*Carcharias taurus* Rafinesque) was the species responsible for the attack.

A schematic Table is set out, showing the main features to be observed in the wounds of future attacks, in the hope that such findings can be pooled to help in the identification of the attacking species occurring off the Natal Coast.

We would like to thank Dr. J. V. Tanchel, the Medical Superintendent of the Addington Hospital in Durban, for his permission to submit this case for publication.

We would also like to acknowledge the help of Mr. Raymond Mundy, Assistant Surgeon and Mr. Ivan Coll, Surgical Registrar, for clinical information about the patient on admission.

We would particularly like to acknowledge the great help and advice of Dr. Nathan Sacks, Radiologist, Addington Hospital, in interpreting the X-rays.

Dr. G. A. Drummond of Durban was responsible for the bacteriological studies both on this case, and on the swabs taken from shark's jaws in 1959 and 1960, and we would like to acknowledge his help.

Miss M. McLaggan, the NPA photographer kindly made available the negative of Fig. 7.

Miss Jeanette D'Aubrey, Research Assistant at the Oceanographic Research Institute, drew diagrams and gave much valuable assistance.

Finally we would like to acknowledge permission from the President of the S.A. Association for Marine Biological Research to photograph and measure specimens from the Shark Jaw Collection of the Durban Oceanographic Research Institute.

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MODERN THERAPY IN DEPRESSION

PHYSICAL METHODS OF TREATMENT*

MAX BERNARD FELDMAN, M.B., M.R.C.P.(E.), D.P.M.
Johannesburg

Mr. Chairman, Colleagues:

It falls to me to discuss the *Physical Methods of Treatment* in tonight's Symposium on *Modern Therapy in Depression.*

Three main points will be made and 3 case histories quoted in support of these.

1. *The Distinction Between the Two Chief Types of Depression.* In the *exogenous* (reactive, neurotic or hysterical) *depression,* firstly, the depressing factors in the patient's environment appear to be adequate to produce the intensity and duration of depression manifest and, secondly, improvement in the circumstantial situation (when possible) is followed by rapid improvement in the depression.

This type of depression occurs in 'normal' people, the every-day grief reaction being an example.

The depressive reaction is, of course, liable to be more effulgent, dramatized and prolonged in the 'neurotic' person. An unhappy outcome may result in this latter as exemplified in:

THE SORROWS OF WERTHER

'Werther had a love for Charlotte
Such as words could never utter;
Would you know how first he met her?
She was cutting bread and butter.

Charlotte was a married lady,
And a moral man was Werther,
And for all the wealth of Indies,
Would do nothing for to hurt her.

So he sigh'd and pined and ogled,
And his passion boil'd and bubbled,
Till he blew his silly brains out,
And no more was by it troubled.

* A paper read at a Symposium on *Modern Therapy in Depression,* held under the auspices of the Department of Psychiatry and Mental Hygiene of the University of the Witwatersrand, Johannesburg, on 26 August 1960.

Charlotte, having seen his body
Borne before her on a shutter,
Like a well-conducted person,
Went on cutting bread and butter.'

W. M. Thackeray.

Others, of course, may take catastrophe more stoically as when:

'Eating more than he was able,
Augustus died at breakfast table.
"If you please," said little Meg,
"May I have his other egg?"'

Characteristically, in the patient suffering from exogenous depression, the mood varies with events and circumstances during the day, the difficulty with sleep is *initial,* that is to say, he cannot get *off* to sleep but, once asleep, he sleeps through. The agitation and distress bear *no* definite relationship to the time of the day.

Many of these depressive reactions remit spontaneously with the passage of time, remission being expedited, as we all know, by a combination of sympathetic understanding, environmental manipulation and mild sedation.

Contrast this with the *endogenous* group of depressions, which are best subsumed under the heading of *melancholia.*

By melancholia is meant a mental illness, *either* major or minor, in which the prime disorder, that of mood, is *pathological* in the sense that the quality and quantity or duration of effective disturbance is *out of proportion* to what might appear to be the precipitating cause.

The characteristics of melancholia, make it easily recognizable if they are looked for:

(*a*) The patient suffers anguish of mind which

(*b*) is apt to be worse in the early hours of the morning and to lighten as the day passes on towards sunset. This is accompanied by

(*c*) a wakefulness after an initial brief period of sleep (of 3–4 hours' duration), the patient having no initial difficulty in getting off to sleep—that is to say, the insomnia is *terminal.*

(*d*) Early morning and forenoon agitation is usually associated with the depression. Sometimes the agitation is so great as almost entirely to camouflage the underlying depression and the condition mistakenly assumed to be an anxiety state.

(*e*) The patient blames *himself* for his misery and not those about him—that is to say, ideas of personal unworthiness are very prominent.

(*f*) He tends to feel hopeless about the situation.

THE PESSIMIST

'Nothing to do but work,
Nothing to eat but food,
Nothing to wear but clothes,
To keep one from going nude.

Nothing to breathe but air,
Quick as a flash 'tis gone;
Nowhere to fall but off,
Nowhere to stand but on.

Nothing to comb but hair,
Nowhere to sleep but in bed,
Nothing to weep but tears,
Nothing to bury but dead.

Nothing to sing but songs,
Ah, well, alas! alack!
Nowhere to go but out,
Nowhere to come but back.

Nothing to see but sights,
Nothing to quench but thirst,
Nothing to have but what we've got,
Thus through life we are cursed.

Nothing to strike but a gait;
Everything moves that goes,
Nothing at all but common sense
Can ever withstand these woes.'

B. J. King.

It is this combination of anguish and hopelessness which leads to preoccupation with suicide as a welcome relief from the patient's continued misery.

It must not be forgotten that this grave condition can, and frequently does, occur in minor form. To draw attention to this variant the term *melancholia minor* has been coined. It has all the hallmarks, yet it is not so profound as to amount to a psychosis, hence it is frequently overlooked. Melancholia minor offers, in my view, the only justifiable area at the present time for chemotherapy with the newer antidepressive medication, though even here much more rapid symptomatic relief can be obtained in this condition with the older antidepressive medications of the amphetamine series.

Lastly, it must be borne in mind that melancholia, major and minor, tends to be episodic, i.e. spontaneously remitting with time. Whatever remedy is last used may erroneously get the credit for cure.

2. *Shock Treatment.* Though not modern (it came into use in 1938), it is, with modern intravenous anaesthesia combined with intravenous muscle relaxants, safe, rapidly effective and psychologically well tolerated.

(*a*) The death rate per treatment in a recent British series of a quarter of a million treatments, has been calculated to be 0.003%, i.e. 3 deaths per 100,000 treatments. All the

deaths in this series occurred in 'poor-risk' cases, elderly patients with degenerative cardiovascular disease. Even in these, however, when the agitation and distress of melancholia threaten life, heroic measures are sometimes necessary.

One elderly gentleman with 2 previous episodes of coronary thrombosis and one cerebro-vascular accident, was found standing and praying in the corner of a room in his flat anticipating his imminent death as punishment for his many sins. He had spent many hours prior to my visit in this position. His lower limbs were grossly oedematous from a combination of congestive cardiac failure, malnutrition and his maintained position for hours at a time over several days.

After enforced bedrest, feeding, diuretics and digitalis in a Psychiatric Nursing Home over a short period, electro-convulsive treatment was given and well tolerated, his improvement being so remarkable that he insisted on coming to the rooms in person some weeks after his discharge from the nursing home to say 'Thank you' and pay his account.

Furthermore, as evidence of the transience of the usual mild and temporary memory disturbance which follows ECT, he did not forget to make mention to the bookkeeper that he had been a pharmacist and felt entitled to a 10% discount such as he had invariably allowed his medical customers.

[Our oldest patient to have had ECT (and with splendid result) was 93 years. Is this a record?].

(*b*) The fractures of spine and limbs which used to occur before relaxants and *glissando* induction are neither seen nor heard of today.

(*c*) Not only is ECT safe, it is also *rapidly effective*. In the majority of cases *some* improvement is immediately manifest and *appreciable* improvement evident after the third or fourth treatment, i.e. within *one week* of commencing treatment. This must be contrasted with the advertised 2–6 weeks for the antimelancholic drugs. Can we risk waiting this long during a period which, for the patient and the relatives, is attended by so very much mental distress with the ever-present danger of suicide regarded by the patient as a welcome relief from his agonizing torment.

(*d*) Furthermore, the initial pentothal (we use 200–250 mg.) puts the patient pleasantly to sleep without awareness of scalp electrodes, mouth gag or of those 'stars' boxers are said to 'see' following an upper-cut to the chin.

So simple is the treatment nowadays that more and more patients receive it on an outpatient basis. The estimate of the risk of suicide must, of course, continue to determine whether and, if so, for how long, the patient requires the protection of adequate supervision in an adequately equipped nursing home during the initial period of treatment but, even in those admitted, when sufficient improvement has been achieved (and this within a relatively short period of time) the patient can be discharged to his home to continue treatment as an outpatient.

These days the 'shock' has been taken out of 'shock treatment'—both the physical and mental shock.

3. Having discussed *Melancholia* and *Shock Treatment*, I now come to my third and last point.

Before the unfortunate melancholic can achieve the treatment that will help him, he has several hurdles to surmount. Concern with the stigma associated with mental illness and its treatment is unfortunately compounded by the medical man's attitude to these disorders. Iatrogenic difficulties are added to those arising from illness and social prejudice.

(*a*) When the physician, having failed to elicit evidence of organic disease, uses such phrases for the melancholic as: 'There is nothing wrong with you' or 'Pull yourself together,' or 'It is all up to you,' the evidence of the absence of understanding, patience or compassion on the part of the medical attendant may result in the patient's abandoning hope of help from doctors, thus fortifying his resolution to 'end it all;' or it may lead to his seeking help elsewhere, turning to the hosts of *non-medical* practitioners, ranging from naturopaths to spiritual healers who will be only too ready to receive these medical rejects sympathetically.

(*b*) If the patient is warned that 'unless he stops his nonsense and gets on with the business of living, he will land up in the mental hospital,' this offensive (almost negligent) advice will certainly tend to have the effect of keeping the patient away from psychiatrists and from all the advances in modern therapy that they have to offer for the relief of this unfortunate condition.

An example of this sort of thing occurred in the case of an unfortunate woman, aged 63 years, who was first seen in March 1956, with classical symptoms of melancholia. One of her complaints was epigastric pain, present on waking at 4 o'clock in the morning and improving towards afternoon.

She had been admitted by her physician to a nursing home during which time the proposition had been put to the physician that the patient see a psychiatrist. His response was: 'Keep away from them or you will land up in Tara.'

The general practitioner felt he ought first to have removed some gall stones which had been present for many years and which he had determined were likely to be responsible for her abdominal pain, before allowing her to have ECT.

Following cholecystectomy her agitation and distress became very much more marked and, while convalescing at home, she threw herself into her swimming pool and, for the first time, I was allowed to take over and go ahead.

(*c*) If the condition is mistaken for an anxiety state either because agitation or hypochondriasis masks the depression, or because (as in *melancholia minor*) the depression does not appear profound enough to be 'psychotic,' and the patient is given long-acting barbiturates (which tend to depress him further) or bromides (which in effective dosage tend to confuse the patient), then he is once again apt to come to the conclusion that the cure is worse than the disease. Finally:

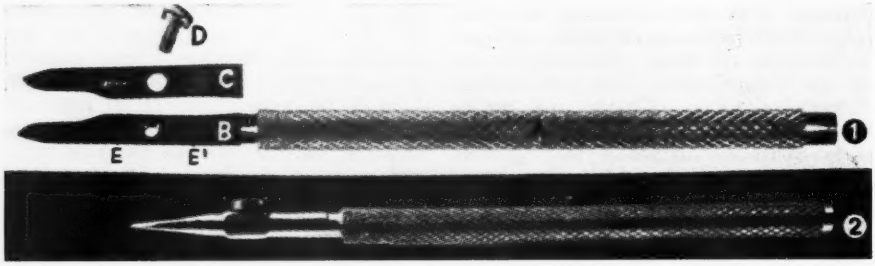
(*d*) If the medical practitioner believes that the newer anti-depressive compounds are invariably effective given the period of up to 6 weeks, then not only must the unfortunate patient suffer a further prolonged period of anguish, but at the end of this period there is an appreciable chance that he will be no better at all. A recent study, e.g. indicates that a certain chemotherapeutic (not a monoamine oxidase inhibitor) has at the end of the so-called effective period of time, a substantial failure rate, in the neighbourhood of 30–40%. Furthermore, all these drugs are liable to cause various side effects (some uncomfortable, some dangerous) during the period that their beneficial effects are being awaited. The unfortunate patient cannot always wait as long as this and tolerates poorly any symptoms over and above those he already has.

GUARDED KNIFE WITH REPLACEABLE BLADE FOR EYE SURGERY

R. A. TROPE, M.B., B.CH. (RAND), D.O.M.S., R.C.P. & S. (ENG.)*

Department of Opthalmology, Baragwanath Hospital and the University of the Witwatersrand, Johannesburg

In performing cataract surgery and lamellar scleral resections, it is often essential to make an incision that does not completely penetrate the wall of the eye. Several instruments have been designed for this purpose; but none has been found available so far which is easily handled by the less skilled surgeon and which always remains sharp. With this in view the instrument illustrated (Fig. 1) was made.



It consists of a handle (A) ending in a plate (B) on which a standard scalpel blade will fit without movement. A second plate (C) fits over the blade and is held in place with a screw (D). E and E¹ are slight projections which fit in the notch of the blade and immobilize it. The blade can be discarded after use and replaced by a new sharp one. The assembled instrument is shown in Fig. 2.

The figures illustrating the guarded instruments (without the blade) are self explanatory.

The size of the screw is not important. The handle plates when in apposition will allow 0.7 mm. of the blade to project at the distal point, and this projection becomes less round the curve until only 0.5 mm. of blade is exposed on the flat.

The size of standard scalpel blades varies very slightly to an unimportant degree, but it has been noticed that with certain brands of blades the variation is larger than in others and one must be prepared to discard these.

This instrument is extremely easy to handle and has been used for lamellar scleral resections and for making preliminary grooves for preplaced sutures and corneal flap extractions.

I would like to express my appreciation to Mr. O. E. McDonald and the Messrs. Vogelzang, who were responsible for making this prototype.

I wish to thank Mr. A. M. Schevitz, of the Photographic Unit of the Department of Medicine, University of the Witwatersrand, for the photographs.

* Head of the Department of Ophthalmology, Baragwanath Hospital, and Part-time Senior Ophthalmologist, University of the Witwatersrand, Johannesburg.

NOTES AND NEWS : BERIGTE

Mr. H. Klein, M.Ch.Orth. (Liverpool), F.R.C.S. (Edin.), has commenced practice as an orthopaedic surgeon at 310 Lister Building, Jeppe Street, Johannesburg. (*Telephones*: *Rooms*: 23-9625; *Residence*: 44-0150).

* * *

Dr. L. Adler (Medical Adviser to the Mines Benefit Society) has been advised that his son-in-law, Dr. Sydney Cohen, has been appointed Reader in Immunology in the University of London (St. Mary's School), and Honorary Consultant to St. Mary's School. Dr. Cohen is also a member of the University Board for Advanced Medical Studies.

* * *

Mr. Bernard Lotzof, M.B., B.Ch. (Rand), F.R.C.S. (Edin.), has commenced practice as a General Surgeon at 1005 Medical Arts Building, Corner of Jeppe and Troye Streets, Johannesburg. (*Telephones*: *Rooms*: 22-8549; *Residence*: 44-2051).

* * *

IN MEMORIAM

ANDREW CAMPBELL WATT, M.B., M.R.C.P.E.

At midnight on 28 October Dr. Andrew Watt was killed in a motor accident while on his way to visit a patient in hospital. Not only has the medical profession in South Africa lost an outstanding and talented figure but many people, both here and in Great Britain, have lost a true and esteemed friend.

Dr. Watt was 45 when he died. He was born in Germiston and was the son of Dr. Andrew Hutton Watt who came to this country just after the war of 1900 and was one of the founders of the Chamber of Mines Hospital at Cottesloe.

Having been educated at St. John's College and at Haileybury, Andrew studied medicine at Edinburgh University where his father had held the post of assistant to Sir Harold Stiles before he emigrated to South Africa.

During his university days Andrew Watt held the Conan Doyle Scholarship and when he qualified he decided to take up neuro-surgery as his career. He became an assistant to Mr. Norman Dott in the Department of Neuro-surgery of Edinburgh University and shortly before the invasion of Normandy he joined the late Prof. Sir Hugh Cairns in Oxford.

Just after the outbreak of war in 1939 the Royal Army Medical Corps established at St. Hugh's College, Oxford, a hospital for treating head injuries and neurological diseases; Dr. Watt became a member of the staff of this hospital.

When the invasion of Europe took place he landed in Normandy on D1 day as the neurologist to a mobile neuro-surgical team and after the war he returned to the Hospital for Head Injuries which had now expanded and moved out to Wheatley.

In 1948 he returned to South Africa and became a lecturer at Witwatersrand University and neurologist to the Johannesburg General Hospital. He worked as a member of Mr. R. Krynauw's Neuro-surgical Unit and, on Mr. Krynauw's retirement, he played a prominent part in keeping the neuro-surgical unit intact during a difficult period.

In spite of his hospital activities and a very busy consulting practice he found time to visit the Baragwanath and Coronation Non-European hospitals once a week until a full-time neuro-surgical department was established to provide a service for these patients.

On his mother's side Andrew came of a long line of lawyers, so that it was very natural that he took great interest in the forensic side of his work as a neurologist.

In the law courts he quickly established a reputation as an expert witness and his opinion was widely sought by his legal colleagues. He appeared in many famous law cases during the past 10 years and was a founder-member of the South African Medico-Legal Society. He made original contributions to medical literature on head injuries, hallucinations and alcoholism.

Apart from his academic and professional attainments, Andrew had a warm humanity and a generous nature that endeared him to those of us who have known and worked with him. Anyone in trouble could always depend on a sympathetic and practical approach to his difficulties and no one who asked for his help ever came away without it.

He was a man of profound culture, widely read, and with an unusual command of the English language.

On ocasions his manner was gruff and abrupt, but he had a puckish sense of humour and nothing gave him more pleasure than to deflate pomposity; but this was done in a manner which few of his victims resented for any length of time.

His untimely death leaves an enormous gap in the ranks of the medical profession of South Africa. It will not easily be filled.

His widow, son and daughter survive him.

A. V. Bird, J. C. Gilroy and
S. Jacobson (*Johannesburg*).

* * *

SQUIBB LABORATORIES (PTY.) LTD.

Squibb Laboratories (Pty.), Limited took occupation of their new premises on 5 December 1960 at Electron Avenue, P.O. Box 48, Isando, Transvaal.

Telephone: 975-4614; *Telegrams*: Ersquibb.

The present distributor arrangement with Protea Pharmaceuticals Limited has ceased, and all first-stage distribution of Squibb Products will be effected by Squibb Laboratories from the new address.

Squibb Laboratories take this occasion of thanking all Squibb customers for the excellent co-operation given to their agents, Protea Pharmaceuticals, over the past years, and look forward to reciprocation of that co-operation in the future.

All enquiries concerning Squibb products must please be directed to the new address.

SOUTH AFRICAN SYMPOSIA ON MODERN THERAPY IN DEPRESSION

The rapid developments in psychiatry, especially of drug treatment, have opened up many problems and questions. To offer an opportunity to discuss this complex field a series of 3 symposia were held:

i. In Cape Town on 9 August 1960, under the auspices of the Department of Medicine of the University of Cape Town;

ii. In Johannesburg on 26 August 1960, under the auspices of the Department of Psychiatry and Mental Hygiene of the University of the Witwatersrand; and

iii. In Durban on 4 October 1960, under the patronage of the Faculty of Neurology and Psychiatry of the College of Physicians, Surgeons and Gynaecologists of South Africa.

CAPE TOWN SYMPOSIUM

After a film entitled *Faces of Depression,* which showed a cross section of depressive cases, Prof. J. F. Brock opened as first speaker of the evening. He stressed that depression was the problem of everyday practice. Every general practitioner and specialist had to be prepared to recognize and differentiate a depression from other conditions, and the chief purpose of this Symposium was to stress the universality of serious depression, its frequency and its appearance in every field of medicine. The present generation of medical students had a better opportunity of studying this field, although the teaching was still inadequate and Professor Brock expressed the hope that the Symposium would go far towards bringing this problem into its proper perspective.

Dr. H. A. Walton next covered the psychiatric aspects of depression and outlined briefly the history of mental illnesses.

He emphasized that not every depressive patient had the target symptoms written on his face and to miss a depression was probably the commonest mistake made in medicine to-day, a mistake which very often led to suicide or a suicide attempt on the part of the depressive patient. The physician therefore could not fail to be interested.

Dr. Walton discussed reactive depression (where definite precipitating factors were present) and endogenous depression (a major form of depression in which hereditary factors were predominant).

Some statistical information given by Dr. Walton disclosed that in 100 persons hospitalized, 50 spent less than 4 months continuously on therapy. Nine of 100 would be hospitalized continuously for 4½ years. The average expected stay would be just under 1 year. However, Larsen of Sweden estimated that only 14% of the total manic depressive psychoses were hospitalized.

After discussing the possible causes of endogenous depression (mentioning evidence of organic and hereditary factors) Dr. Walton concluded by emphasizing the complex range and form of diagnosis attached to depressions, which finally rested with the patient's description of his mood and feelings.

Dr. S. Wolff spoke on the psychotherapy of depression and stressed that whatever the diagnosis and plan of medical treatment was (whether outpatient, drug treatment or ECT), psychotherapy was essential in order to understand the emotional needs of the patient and of the peculiarities of his response to other people.

With reference to Freud's paper *Mourning and Melancholia,* Dr. Wolff explained that mourning and bereavement were the result of the loss of a loved object and the person cannot be expected suddenly to adjust himself to this loss. He dwells on the lost person but time would make new relationships and he readjusts himself. The depressed case, however, is a pathological case and no adjustment can be made. It is here that the psychotherapist makes a valuable contribution. The doctor is an important and powerful link between the emotions and feelings of the patient. The patient considers the doctor to be very important and a person with whom he can discuss his problems. As the doctor is seen in a very special light, he must be aware of the patient's feelings, his needs and his frustrations. It is the task of the doctor, irrespective of the various aetiologies and treatments, to enable the patient to go out into the world free from his emotions and frustrations.

Dr. J. M. MacGregor then spoke on the physical methods of treatment and mentioned that in 1949 Gordon collected 50 different theories of electroconvulsive therapy. Half of these were psychological and psychoanalytical theories but from a physical point of view he described 6 possible mechanisms of electro-convulsive therapy, viz.:

1. *Structural*: Changes may occur in diseased cells of the brain, but not much is known in this connexion.
2. *Endocrine*: Steroid formation is increased.
3. *Anoxia*: Addition of oxygen gave better responses.
4. *Autonomic Factors*: There is not much to support this.
5. *Histamine Reactions within the Brain.*
6. *Changes in the Permeability of Membranes.* This seemed to be the most atractive theory.

Dr. MacGregor mentioned that the biochemical findings in epilepsy were identical with those which took place during electro-convulsive therapy. He also discussed biochemical changes and electroencephalographic changes which occurred with various psychotropic drugs and with electro-convulsive therapy.

Firstly, 2 groups of psychotropic drugs were tested in combination with ECT. The first group accelerated the ECG, increased the voltage and frequencies of waves. This group contained some of the MAO inhibitors and Ritalin. The second group depressed the voltage but produced large slow waves. This group contained among others Tofranil.

Secondly, Tofranil seems to have a blocking effect on the reticular activating system. It also appeared (from ECG tracings) that many of the psychotropic drugs have an anticholinergic action.

The Chairman of the 3 Symposia, *Prof. L. A. Hurst,* then spoke about drug treatment. He restricted his remarks to the potent modern antidepressant drugs notably imipramine or Tofranil, and by way of comparison, the mono-amine oxidase inhibitors. He differentiated the chemistry of the various psychotropic drugs and then gave an account on pathological studies undertaken in Switzerland and England on imipramine.

He quoted statistics from workers in this country (Drs. M. M. R. Clarke and G. M. Garrett) and overseas from which it appears that the overall success in endogenous depressions with Tofranil lies between 70%-75% and in reactive depression approximately 10% lower.

Professor Hurst went on to say that clinical trials were also in progress to compare Tofranil with the MAO inhibitors and a nation-wide comparison is

planned by the Medical Research Council of Britain, which points to the fact that the effectiveness of these agents is recognized.

Professor Hurst said that obviously Tofranil and the MAO inhibitors would not replace ECT. There is a school of thought, however, which stresses that the actual number of treatments can be reduced by the combination of ECT with Tofranil or the MAO inhibitors. He stressed the point that in severe depressions with suicidal danger the application of ECT should not be delayed.

In conclusion, Professor Hurst mentioned the possibility of interesting research in relation with mode of action of these new anti-depressant drugs and biochemical genetics.

JOHANNESBURG SYMPOSIUM

Prof. Guy A. Elliott was the first speaker of the evening and lectured on general aspects of mental hygiene. Referring to the film *Faces of Depression*, where one saw people who had had 3 or 4 surgical operations before the depression was spotted, he pointed out the importance of the physician's always being on the look-out for such conditions. Any system of the body may talk hypochondriasis and hypochondriasis may be the first, the only manifestation of a serious impending depression. Professor Elliott pointed out that it is not enough to know that a patient has no organic disease. This is the least important part of the diagnosis. The important part of the diagnosis of the physician is to be positive about his diagnosis of the psychiatric state. One must go back to study the personality of the patient and to find out what ups and downs in psychiatric mood have happened in the past.

On the other hand, it is equally important that the physician realize that physical illness (whether it be an infection, diabetes, metabolic disorders, etc.) can present as a mental symptomatology.

In concluding Professor Elliott pointed out once more that one must remember that in every person who comes for consultation there is both a physical and mental side.

Dr. T. E. Lynch mentioned the well established landmarks in the clinical psychiatry of psychosis, viz. dementia praecox or schizophrenia and manic depressive psychosis. In line with the title of the symposium Dr. Lynch went on to discuss the depressive phase of the manic depressive psychosis. After describing the main forms of depression he pointed to the danger of disguised depression by somatic symptoms. Very often the physician, the ophthalmologist, the gynaecologist and the surgeon see these patients in the first place. Unless specific inquiries are made, the depression passes undetected. Dr. Lynch stressed the importance of being on the look-out for the ever-present risk of suicide.

Dr. Lynch referred also to the so-called involutional melancholia, which illustrates other features which may be associated with depression. The marked agitation and restlessness, anxiety over trifles and often these combined with obsessive compulsive features of hypochondriacal complaints may be prominent with delusions of degeneration and destruction such as that their brains have melted, bowels have rotted, etc.

People subjected to very severe life situations may develop feelings to an intensity which must be regarded as an illness, the so-called reactive depression. Dr. Lynch was of the opinion that people who develop this type of depression have a propensity to develop mental illness: in other words, there is always an endogenous element in the production of a reactive depression. In concluding, Dr. Lynch referred to psychotherapy, which plays a relatively minor but nevertheless important part in treating depression. The patients should be encouraged and given hope. Attempts to probe into the personal life and the personal details of the patient's environment should be avoided, as these may only intensify the depression. Firm and confident attitudes should be taken with the patient, indicating that he can be helped. This is thoroughly justified in view of the very effective treatments which we now have at our disposal.

Dr. M. B. Feldman discussed the physical methods of treatment of depression. His address is published *in extenso* elsewhere in this issue.

DURBAN SYMPOSIUM

As first speaker *Prof, Guy A. Elliott* discussed the general aspects of mental hygiene.

Dr. B. Crowhurst Archer spoke about psychiatric aspects of depression and psychotherapy. He said that the term *depression* may refer to either a symptom, a syndrome or a disease entity. He then outlined the common variety of endogenous depression, viz: Manic depressive states; Involutional depression; Senile depression.

When speaking about the suicidal danger, Dr. Crowhurst Archer said that it is commonly believed that those who talk about suicide never carry out their threat. In practice, however, it is found that one third of those patients make an attempt to kill themselves. Half-hearted suicide attempts are often disregarded as being hysterical. In fact, these patients are suffering from retardation and, as soon as their condition improves, they tend to employ more effective and successful methods.

Dr. Crowhurst Archer went on to say that for accurately diagnosing depression one should employ the multi-dimensional approach:

i. From the phenomenological point of view: presence or absence of retardation, depersonalization, hypochondriasis, agitation, etc.:

ii. From the aetiological point of view: psychogenic or endogenous conditions or both;

iii. Physique and temperament: the asthenic or pycnic type.

While most patients show mixed features, it may be said that there is an affinity firstly between the *pycnic* build, cyclothymia and manic-depressive psychosis and secondly between the *asthenic* type and schizophrenia.

Dr. Crowhurst Archer agreed with the school of thought which believes that despite physical methods of treatment it is still necessary to distinguish psychogenic induced reactive depression from the more endogenous type of illness, the former sometimes responding to psychotherapy, the latter very rarely.

He stressed the importance of deciding during the first interview whether the patient could be treated as an outpatient or could be hospitalized. Treatment as outpatients was most desirable in order not to disturb occupation or other interests. In other countries there are the advantages of the day and night hospitals, amenities which have unfortunately not yet been provided in this country.

Hospital treatment, however, may be necessary for the protection of the patient (suicidal danger) or of other people or in order to carry out special treatment (cortisone, narcosis, ECT, etc.).

Dr. R. W. S. Cheetham gave a brief historical summary of events which led to ECT.

The modern electroplexy (Dr. Cheetham stressed that the word 'shock' is unpsychological) is quite different from what was done some years ago. With the application of muscle relaxants, light anaesthesia and working up the current to its maximum, one finds that the reaction is really mild and two nurses can control the effects of the convulsion. Before relaxants were used, when the patient had a convulsion it was relatively frequent to find that he had fractures of the vertebrae, fracture-dislocations of the humerus, possibly dislocations of the jaw. All these disabilities have now gone by the board with the modern type of treatment so that the treatment in itself is relatively simple and remarkably free from risk. One still gets the odd case of fatality reported in the literature, but this is relatively rare.

The number of treatments varies from patient to patient. When the stage is reached where the patient shows an improvement of mood and is beginning to sleep and to have an appetite and beginning to be active again, then one has turned the corner with the patient. From then on the idea is to give 2–3 treatments more. One may find that certain patients will need a second course of treatment after a couple of months or that they will need possibly one treatment per month as a maintenance dose. However, today, using thymoleptic drugs such as Tofranil in conjunction with ECT, we have found that the relapse rate is very much lower than it was before and the need for a repeat treatment is lessened. One also does not find the number of cases needing this maintenance ECT any more.

Dr. Cheetham thought that there was no reason to suppose that definite brain damage occurs with ECT. Reversible changes may happen, probably at the enzyme level, but no real, known, definite organic brain changes have been reported. Definite contra-indications to ECT, however, are cardiac failure, myocardial infarction of recent origin, extreme degrees of hypotension and cerebral haemorrhage. It used to be thought that pulmonary tuberculosis was a contra-indication, but this has been disproved.

Dr. Cheetham said that ECT should be carried out in a hospital or a clinic since the results with ECT in outpatients were not so good. It must be realised that there is the follow-up with chemotherapy and with psychotherapy. He further stressed that ECT is a specific treatment, and not to be regarded as a treatment just given because one cannot do anything else. It must be given at the right time and to the right person and in the right place.

Dr. Cheetham then briefly discussed modified insulin treatment, continued narcosis, deep sleep or hibernation treatment.

Dr. Cheetham thought that ultimately ECT would be replaced by chemotherapy plus psychotherapy, but at present he found that a combination of ECT and chemotherapy was the most effective way of handling depression.

As last speaker *Prof. L. A. Hurst* (Chairman) addressed the meeting and reviewed drug treatment.

In conclusion *Mr. A. G. Sweetapple* proposed a vote of thanks to the speakers and said that, in a way, history had been made in Durban in that the Faculty of the College had arranged a symposium of great interest to a number of practitioners and he expressed the hope that this would be the forerunner of many other such meetings.

A SERIES OF SK&F MEDICAL FILMS

The following films are available on request from SK&F Laboratories, P.O. Box 38, Isando, Transvaal.

All the films listed are 16 mm. sound films, and are available on loan without charge. Some are intended for showing to professional audiences; others are of more general interest and are intended primarily for lay audiences. It is our hope that these films will make a useful contribution to medical education.

Bookings may be arranged through local SK&F representatives or by writing to the above address. Whenever possible, 4 weeks prior notice should be given and an alternate showing date of at least one month after the preferred date.

Films marked * are intended for professional audiences only.

* **Psychiatric Nursing: The Nurse-Patient Relationship**

Black and white, 34 minutes.

Presented by The American Nurses Association and National League for Nursing in co-operation with the Mental Health Education Unit, Smith Kline & French Laboratories. Designed to meet a specific need in psychiatric nursing education, this film emphasises the importance of a therapeutic nurse/patient relationship in the care and treatment of the hospitalized mental patient. The film traces a developing relationship between a psychiatric nurse and one of many patients in her care. In following the frustrations as well as the achievements of a nurse in a typical State Mental Hospital situation, many of the basic techniques in psychiatric nursing are reviewed.

Although this film is intended primarily for showing to graduate nurses with some experience in psychiatric nursing, it should also serve as a valuable teaching aid at all levels of the nursing profession —from the experienced psychiatric nurse to the First Year Student Nursing School. It may also be of interest to resident physicians in psychiatry. An instructor's guide for this film is available.

* **Recognition and Management of Respiratory Acidosis,** by Reginald H. Smart M.D., Hurley L. Motley Ph. D. M.D. and Joseph F. Boyle, M.D.

Colour, 35 minutes.

This teaching film presents a clinic on a topic of increasing interest to the medical profession. The course of a fatal case of respiratory acidosis is illustrated and discussed by the panel. The etiology and symptoms of this condition are examined in detail and the importance of early recognition emphasized. A suggested treatment programme including emergency treatment of acute cases is outlined. The use of various types of pressure breathing apparatus is demonstrated with patients. Shown at the Cardio-Respiratory Laboratory, The University of Southern California School of Medicine (1958). Shown at the 1958 Annual Meetings of the American Medical Association and American College of Physicians.

* **Human Gastric Function,** by Stewart Wolf, M.D.

Colour, 18 minutes.

In this teaching film Dr. Wolf, Head of Department of Medicine, University of Oklahoma, reports on an experimental study of "Tom", a unique patient widely known in medical circles. "Tom" had an accident in early childhood which resulted in an extensive gastric fistula. The fistula permitted examination of the stomach mucosa, secretory action

and gastric motility under varying conditions. These studies, conducted over several years, gave the investigators new insight into the stomach's complex responses to different psychological states and stresses. The first portion of the study is carried out in collaboration with Dr. Harold G. Wolff of Cornel University Medical College, New York Hospital. The film is a partial record of an extensive investigation. The final phases of research were performed at the Oklahoma Medical Research Foundation, (1957).

(To be continued)

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Dr. V. D. Bokkenheuser, of the South African Institute for Medical Research, has been appointed to a Research Fellowship at the Children's Hospital, Buffalo, U.S.A. Dr. Bokkenheuser will spend a period of one year with Dr. E. Neter studying the receptor sensitivity of erythrocytes under diverse pathological conditions.

Dr. Geoffrey Dean, of Port Elizabeth, has returned from a 4-month visit overseas. He was invited to Vienna to the World Chest Congress, where he lectured on *Air Pollution and Lung Cancer.*

He also participated in a *Symposium on Air Pollution.* The other speakers were: Dr. A. I. Banyai (*U.S.A.*); Dr. D. F. Eastcott (*New Zealand*); Dr. S. M. Farber (*U.S.A.*); Dr. M. J. Flipse (*U.S.A.*); Dr. M. Ibrahim (*Pakistan*); Dr. Katsumi Kaida (*Japan*); Dr. T. F. Mancuso (*U.S.A.*); Dr. Jo Ono (*Japan*); Dr. B. Pierson (*France*); Dr. C. Sirtori (*Italy*); Dr. A. J. Vorwald (*U.S.A.*); Dr. D. G. Alarcon (*Mexico City*).

Dr. Dean visited London and Oxford and took part in the Preliminary Meeting of the World Neurological Congress scheduled for September 1961 in Rome.

He also investigated an epidemic of toxic porphyria in Turkey, where many thousands of children, particularly, were affected as a result of eating bread made from wheat treated with a fungicide.

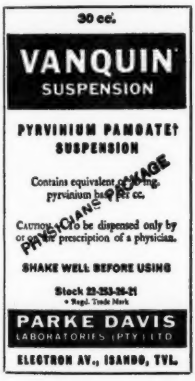
PREPARATIONS AND APPLIANCES

VANQUIN SUSPENSION

A SINGLE-DOSE TREATMENT FOR THREADWORM INFESTATION

It has been estimated that more than 800,000,000 people, over one third of the earth's population, are hosts to various types of helminths.

Threadworms are probably one of the most prevalent parasitic infestations, especially in children.



The incidence of threadworm infestation throughout the world was estimated by Stoll in 1947 to be more than 200 million and there is little doubt that the great increase in world population since 1947 has been accompanied by an increase in the number of threadworm infestations.

Parke, Davis Laboratories (Pty.) Limited, have introduced *Vanquin Suspension,* a new and unusually effective single-dose treatment for threadworm. Clinical reports have shown *Vanquin Suspension to* achieve nearly 100% cure rate.

Description: *Vanquin Suspension* (pyrvinium pamoate, Parke-Davis) is a new medicinal agent having as its active ingredient pyrvinium pamoate, a deep red sparingly soluble salt of a cyanine dye.

Indications: *Vanquin Suspension* has been shown to be singularly effective against threadworm. In a single-dose *Vanquin Suspension* will clear the majority of infestations. It is truly vermicidal and is the ideal means of breaking the threadworm life cycle. The simplicity of the treatment makes *Vanquin Suspension* particularly suitable for eradication programmes in households or institutions.

Dosage and Administration: Orally, in a single-dose equivalent to one 5 ml. teaspoonful of Suspension per 22 lb. (10 kg.) body weight approximately.

Parents and patients should be told that *Vanquin* will colour the stools a bright red and if spilled will stain.

Side Effects: In general *Vanquin* is well tolerated and in the recommended doses there have been few side effects. A few patients have experienced nausea or vomiting. Mostly these were older children or adults who received relatively large doses. In several cases it is doubtful that the gastric upset was drug-induced. Toxicity due to overdosage is unlikely as *Vanquin* is not appreciably absorbed.

Package Information: A strawberry-flavoured suspension containing the equivalent of 10 mg. pyrvinium base per ml. in bottles of 30 ml.

FERRO FOLGAMMA FOR ANAEMIA

Ferro Folgamma, capsules (Ankermann laboratories—Newport Trading Corporation) contain per capsule 100 mg. ferrous sulphate, 5 mg. folic acid and 10 mcg. vitamin B_{12}.

Essential blood-forming factors recommended for the treatment of anaemias (hypochromic, pregnancy and menorrhagias) and general lassitude, lack of concentration, etc. The capsules are excellently tolerated and cause no nausea or constipation.

Average dosage: 3 x 1 caps. daily.

FOLGAMMA

Folgamma, tablets (Ankermann Laboratories—Newport Trading Corporation) contain per tablet 25 mcg. vitamin B_{12}, 15 mg. folic acid.

Folic acid is, like vitamin B_{12}, indispensable in metabolic processes and haemopoiesis. Both vitamins complement each other. A combination of both is often more successful than either of them alone (except in pernicious anaemia).

Indications: Secondary anaemias (malnutrition, post-gastrectomy, etc.), seborrhoea, acne, etc.

Maintenance dose: 2—3 tabs. daily.

FOLGAMMA FORTE

Folgamma Forte for intramuscular injection (Ankermann Laboratories—Newport Trading Corporation) contain per injection of 1 c.c. 100 mcg. vitamin B_{12}, 15 mg. folic acid.

Indications: Hyperchromic anaemias, symptomatic, pernicious-like anaemias, in children (megaloblastic), haemolytic anaemias, aplastic anaemias, damage to liver parenchyma, gastro-enteritis, colitis, psoriasis, acne, seborrhoea, etc.

Dosage: Individually, average 2–3 times per week; 1 c.c. intramuscularly.

OSADRIN

Osadrin, tablets, for injection (Knoll, A. G.—Newport Trading Corporation) contain 250 mg. phenopyrazone + aminophenazone.

For the treatment of all kinds of rheumatic and rheumatoid diseases; also gout and thrombophlebitis.

Analgesic and antiphlogistic in action (antipyretic).

High tolerance by both the gastric and the haemopoietic systems. Toxicity markedly reduced.

Subjective symptoms disappear. BSR normalized, C-reactive protein disappears from serum.

Dosage: 4–6 tabs. daily.

TONIAZOL

Toniazol, liquid tonic (Knoll, A. G.—Newport Trading Corporation) contains **Cardiazol®**, caffeine and alcohol. Has a highly beneficial effect on vegetative dystonies of the circulatory system. Stimulates centrally, increases blood flow, oxygen uptake by cerebral vessels and stimulates appetite.

Ideal tonic for management of convalescence and general lassitude, syncopy, in geriatrics (cerebral sclerosis).

Dosage: 3–4 teaspoonfuls daily.

MULTIFUNGIN FOR DERMATOMYCOSIS

Multifungin, liquid, ointment, powder (Knoll, A. G.—Newport Trading Corporation) contains 5-bromsalicyl-4′-chloranilide, a new potent antimycotic and bacteriostatic.

For the treatment of *all forms* of dermatomycosis, irrespective of the causative organism. Highly effective in 'athlete's foot', 'ringworm', etc. Bacterial superinfections are equally effectively combated owing to the high bacteriostatic action of **Multifungin.** Most pathogenic staphylococci and streptococci are inhibited at a concentration of 1 : 1,000,000.

Treatment is individually suited, 2–3 applications daily for about 3–4 weeks.

CORTIFLEXIOLE

Cortiflexiole, oily suspension of hydrocortisone (0.4% free alcohol) and Neomycin 1.15%. (Dr. Mann Laboratories—Newport Trading Corporation). This is a highly effective combination of the antiphlogistic hormone hydrocortisone with the antibiotic neomycin, for *all topical* use, except on mucosal membranes. Superior in effect in all acutely inflamed and infected conditions of the skin and of the eye, owing to a rapid and thorough absorption. Contains in addition epithelium protecting vitamin A.

2–3 applications daily.

SULFAPLASTIL: FLEXIBLE SKIN PLASTIC FILM

Sulfaplastil, suspension, absorbent and flexible skin plastic film containing dymethyl-pyrimidin-sulfanilamide and acetyl-amido-4-aminobenzylsulfonamide in a plastic vehicle of polyvinyl-pyrrolidin.

A rational topical sulphonamide treatment of all infective lacerations or wounds, cuts and burns. By sealing off the trauma, it aims at the prevention of further spread of the infection, assists the local defence mechanism of the leucocytic system before this becomes active.

2–3 applications daily.

PHENOBARBITONE RECTIOLE

Phenobarbitone Rectiole, an 'old friend in a new dress' (Dr. Mann Laboratories—Newport Trading Corporation).

Phenobarbitone, 1½ gr. in a true solution for rectal instillation in vomiting, convulsions, for premedication, etc.

It is very rapidly absorbed from instillation into the lower section of the rectum by absorption through the vena cava system, avoiding the liver circuit (portal vein system).

To be taken as required.

CORRESPONDENCE

ANDREW CAMPBELL WATT MEMORIAL FUND

To the Editor: A Memorial Fund has been started to commemorate the late Dr. Andrew Campbell Watt.

The following have agreed to serve as the Trustees of the Fund:

Mr. Keith Allen	Dr. S. Jacobson
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Prof. Norman Dott will represent Trustees in United Kingdom.

The Fund is to finance a scholarship to assist deserving South African graduates in medicine to study neurology or neuro-surgery.

The Trustees are confident that the generosity of his friends will ensure an amount which will allow this to be carried out on a substantial scale.

Should the amount collected fall short of the sum necessary to establish a Scholarship, it is hoped to finance an annual lecture in his memory.

The Trustees feel that medical practitioners in South Africa would wish to be informed of the establishment and objects of this Fund, and that they might wish to make some contribution. Those who care to assist in making this Memorial a reality, should send their contribution to the Honorary Treasurer, R. B. Sinclair Esq., c/o Douglas Low & Co., Aegis Building, Johannesburg. This will be most gratefully received and acknowledged.

Johannesburg. The Trustees.

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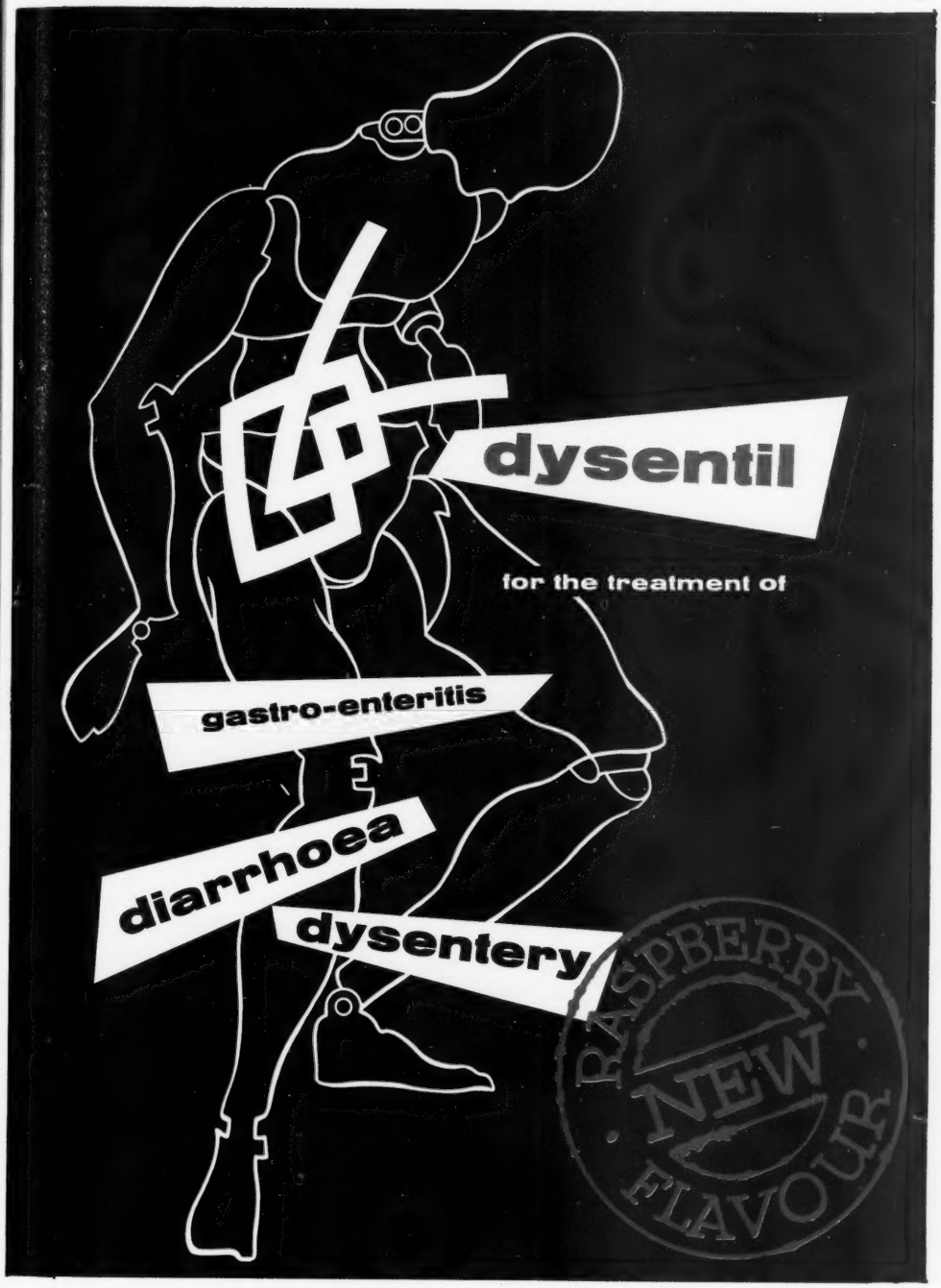

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